Amendments to the Claims

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1-46. (canceled)

47. (currently amended) A method for the electrophoretic separation of particles, particularly of membrane-adherent macromolecules, the method comprising:

applying the particles ~~to be separated on~~ to a substrate-supported membrane such that the particles are mobile across a surface of the substrate-supported membrane;

providing an electrical field having a direction that is oriented along the surface across which the particles are mobile; and

performing electrophoresis according to at least one of:

temporarily modifying at least one of the strength and the direction of the electrical field such that a resulting force acts on the particles causing movement among the particles that depends on the length of the particles, and

using~~, as the~~ a substrate supporting the substrate-supported membrane~~, a substrate-supported membrane having~~ that has a structured membrane-compatible surface~~, wherein the surface of the substrate-supported membrane is structured to provide~~ that provides a force acting on the moving particles

~~causing movement among the particles~~ that depends on the length of the particles.

48. (previously presented) A method according to claim 47, wherein the substrate-supported membrane is a fluid lipid membrane, particularly comprising at least one of the lipids activated by PEG and DAC-Chol lipids.

49. (previously presented) A method according to claim 48, wherein the fluid lipid membrane is a cationic fluid lipid membrane.

50. (previously presented) A method according to claim 48, wherein the fluid lipid membrane includes amphiphilic macromolecules.

51. (previously presented) A method according to claim 48, wherein the fluid lipid membrane includes bilayers of charged lipids.

52. (previously presented) A method according to claim 47, wherein the electrical field is a pulsed electrical field.

53. (previously presented) A method according to claim 47, wherein the electrical field is an alternating field on which a time constant field is superimposed.

54. (previously presented) A method according to claim 53, wherein the alternating field and the time constant field are superimposed in a crosswise manner.

55. (currently amended) A method according to claim 47, wherein the ~~substrate-supported membrane includes a substrate having a~~ structured membrane-compatible surface including ribs, supporting the membrane.

56. (previously presented) A method according to claim 55, wherein the substrate exhibits a periodicity ranging from 2 nm to 200 nm.

57. (previously presented) A method according to claim 55, wherein the ribs have a height in the range of 1 nm to 10 nm.

58. (previously presented) A method according to claim 55, wherein the electrical field is a time constant field having a direction that is substantially parallel to the ribs.

59. (previously presented) A method according to claim 47, wherein said movement is a rotation.

60. (currently amended) A method according to claim 47, wherein:

the ~~substrate-supported membrane~~ substrate includes an exclusion area in which the particles are not mobile; and

the method further comprises collecting the particles at said exclusion area upon providing the electrical field, prior to performing the electrophoresis.

61. (previously presented) A method according to claim 60, wherein:

the substrate-supported membrane is a fluid lipid membrane, particularly comprising at least one of the lipids activated by PEG and DAC-Chol lipids; and

the exclusion area is a non-fluid area of the fluid lipid membrane.

62. (currently amended) A method of observing an electrophoretic separation, comprising:

~~applying the particles to be separated on a substrate-supported membrane such that the particles are mobile across a surface of the substrate-supported membrane;~~

~~providing an electrical field having a direction that is oriented along the surface across which the particles are mobile;~~

~~performing electrophoresis according to at least one of~~

~~temporarily modifying at least one of the strength and the direction of the electrical field such that a resulting force acts on the particles causing movement among the particles that depends on the length of the particles, and~~

~~using, as the substrate-supported membrane, a substrate-supported membrane having a structured surface, wherein the surface of the substrate-supported membrane is structured to provide a force acting on the particles~~

~~causing movement among the particles that depends on the length of the particles;~~

performing the method for the electrophoretic separation of particles of claim 47;

recording digitized image data of the electrophoretic movement; and

evaluating the recorded image data using a computer.

63. (previously presented) A method according to claim 47, wherein the particles to be separated include at least one of DNA, RNA, DNA-oligomers, RNA-oligomers, and proteins.

64. (currently amended) A method according to claim 47, further comprising providing a pH gradient, wherein the particles migrate ~~in~~ according to the pH gradient.

65. (previously presented) A method according to claim 64, wherein the pH gradient is provided parallel to the electrical field.

66. (previously presented) A method according to claim 64, wherein the pH gradient is provided substantially perpendicular to the electrical field.

67. (currently amended) A microchannel electrophoresis chamber, comprising at least one channel having a bottom surface including a ~~A~~ substrate-supported membrane, the substrate-supported membrane comprising:

a substrate and a fluid lipid membrane, wherein the fluid lipid membrane is dried up.

68. (currently amended) A ~~substrate-supported membrane~~ microchannel electrophoresis chamber according to claim 67, whcrein the fluid lipid membrane includes cationic lipids.

69. (currently amended) A ~~substrate-supported membrane~~ microchannel electrophoresis chamber according to claim 67, wherein the fluid lipid membrane includes amphiphilic macromolecules.

70. (currently amended) A ~~substrate-supported membrane~~ microchannel electrophoresis chamber according to claim 67, wherein the fluid lipid membrane includes bilayers of charged lipids.

71. (currently amended) A ~~substrate-supported membrane~~ microchannel electrophoresis chamber according to claim 67, wherein the fluid lipid membrane includes at least one non-fluid area.

72. (currently amended) A ~~substrate-supported membrane~~ microchannel electrophoresis chamber according to claim 67, wherein the substrate includes an optically transparent material.

73. (currently amended) A ~~substrate-supported membrane~~ microchannel electrophoresis chamber according to claim 72, wherein the optically transparent material includes plastic.

74. (currently amended) A ~~substrate-supported membrane~~ microchannel electrophoresis chamber according to claim 73, wherein the plastic includes at least one of PC, PMMA, PS, PE, and plastic formed of cyclic olefins.

75. (currently amended) A ~~substrate-supported membrane~~ microchannel electrophoresis chamber according to claim 72, wherein the optically transparent material includes glass.

76. (currently amended) A microchannel electrophoresis chamber~~, comprising:~~

~~at least one channel having a bottom surface including a substrate-supported membrane~~ according to claim 67~~, ; and~~ further comprising an electrode assembly connected to the channel.

77. (previously presented) A microchannel electrophoresis chamber according to claim 76, wherein each channel has a width ranging from 1 μm to 10 mm.

78. (previously presented) A microchannel electrophoresis chamber according to claim 76, wherein each channel has a depth ranging from 10 nm to 20 μm.

79. (previously presented) A microchannel electrophoresis chamber according to claim 76, wherein the at least one channel is a plurality of channels arranged as a two-dimensional matrix.

80. (previously presented) A microchannel electrophoresis chamber according to claim 76, wherein the electrode assembly includes an electrode disposed at each longitudinal end of each said channel.

81. (previously presented) A microchannel electrophoresis chamber according to claim 76, wherein the electrode assembly includes an electrode extending longitudinally in the direction of the channel at each side of each channel.

82. (new) A method for the electrophoretic separation of particles, particularly of membrane-adherent macromolecules, the method comprising:

non-specifically binding the particles to a substrate-supported membrane such that the particles are mobile across a surface of the substrate-supported membrane;

providing an electrical field having a direction that is oriented along the surface across which the particles are mobile; and

performing electrophoresis according to cause movement among the particles that depends on the length of the particles;

wherein the substrate-supported membrane is a cationic fluid lipid membrane.

83. (new) The method of claim 82, wherein performing electrophoresis includes temporarily modifying at least one of the strength and the direction of the electrical field such that a resulting force acts on the particles, thereby causing movement among the particles that depends on the length of the particles.

84. (new) The method of claim 82, wherein performing electrophoresis includes using a substrate to support the substrate-supported membrane that has a structured membrane-compatible surface that provides a force acting on the moving particles that depends on the length of the particles.